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EXAMINER	
HUSSAIN, IMAD	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/684,387	GELVIN ET AL.	
	Examiner	Art Unit	
	IMAD HUSSAIN	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,9-14,16,18,20-24,27-38,40,41,43 and 45-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,9-14,16,18,20-24,27-38,40,41,43 and 45-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *23 July 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

0DETAILED ACTION

1. Applicant's amendment dated 23 July 2008 has been received and made of record. Claims 1, 16, 18, 20, 22-24, 27, 29-30, and 32-35 have been amended. Claims 5-8, 15, 17, 19, 25, 26, 39, 42 and 44 have been cancelled. New claims 45-55 have been added. Claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, 43 and 45-55 are currently pending.

2. Applicant's amendment to claim 27 obviates previously raised claim objection. This objection is therefore withdrawn.

Response to Arguments

3. Applicant's arguments with respect to 35 U.S.C. 102 and 103 rejections of claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, and 43 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's indication of intent to submit a terminal disclaimer is noted. However, until said terminal disclaimer is received Examiner must maintain the double patenting rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, 43 and 45-55 rejected under 35 U.S.C. 103(a) as being unpatentable over Agre et al. (US 6208247 B1, hereinafter *Agre*) in view of Harvey J. Kulka et al (US 5483827, hereinafter *Kulka*).

Regarding claims 1 and 44, Agre teaches *a sensor node comprising at least one substrate* [Agre: Column 5 Lines 18-20 "sensor"] *coupled among at least one processor* [Agre: Column 5 Lines 32-33] *and at least one energy source* [Agre: Column 4 Lines 66-67], *wherein the at least one substrate is at least one sensor* [Agre: Column 5 Lines 18-20], *wherein functions of the sensor node are remotely controllable and the sensor node is programmable via wireless internetworking among a plurality of network elements* [Agre: Column 5 Lines 40-44 and Column 15 Lines 12-17].

Agre does not explicitly disclose:

at least one antenna incorporated in or carried on the at least one substrate;

that *the at least one substrate is flexible; or*

that *the at least one substrate physically supports the at least one processor and the at least one energy source.*

However, Kulka teaches:

at least one antenna incorporated in or carried on the at least one substrate [Kulka: Abstract and Column 3 Lines 13-14]*;*

that *the at least one substrate is flexible* [Kulka: Column 4 Lines 50-51]*; and*

that *the at least one substrate physically supports the at least one processor and the at least one energy source* [Kulka: Abstract, Column 2 Lines 62-63 and Column 3 Line 11].

Agre and Kulka are analogous art in the same field of endeavor as both describe sensor systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the flexible substrate scheme of Kulka in the system of Agre. One of ordinary skill in the art would have been motivated to modify the system of Agre with the flexible substrate scheme of Kulka because in doing so, the system would allow for more easily conforming the sensor device to the surface upon which it is to be attached [Kulka: Column 4 Lines 50-52].

Regarding claim 9, Agre-Kulka teaches *at least one communication physical layer including radio frequency (RF) power management* [Agre: Column 3 Lines 53-56].

Regarding claim 10, Agre-Kulka teaches that *the at least one processor is coupled to at least one component selected from a group consisting of actuators, sensors, signal processors, interfaces, power supplies, data storage devices, and communication devices* [Agre: Figure 3].

Regarding claim 12, Agre-Kulka teaches that *the at least one energy source includes a thin film photovoltaic device, wherein the thin film photovoltaic device is an energy*

source and an optical presence detection sensor [Agre: Column 5 Lines 61-63 and Column 6 Line 65].

Regarding claim 13, Agre-Kulka teaches that *the sensor node is coupled to at least one item selected from a group consisting of machinery components, electronic equipment, mechanical equipment, electro-mechanical equipment, a facility, a structure, a material, a biological system, people, animals, vegetation, clothing, crates, packages, product containers, shipping containers, a transportation system, vehicle components, an outdoor area, and an indoor area* [Agre: Column 4 Lines 51-58 and Column 1 Lines 8-13].

Regarding claim 14, Agre-Kulka teaches that *the at least one sensor receives at least one signal type selected from a group consisting of temperature, shock, vibration, motion, acceleration, tip, light, sound, and package opening and closing* [Agre: Column 3 Lines 14-16].

Regarding claim 18, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node and at least one client computer* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the sensor node* is *coupled to the at least one client computer* [Agre: Column 5 Lines 40-44] *through the plurality of network elements, wherein the at least one node supports at least one communication mode selected from a group consisting of wireless communications, wired*

communications, and hybrid wired and wireless communications [Agre: Column 1 Lines 37-40 and Column 2 Lines 30-31], *wherein at least one redundant communication pathway* [Agre: Figure 2] *is established among the plurality of network elements.*

Regarding claim 22, Agre-Kulka teaches that *the plurality of network elements comprise a plurality of network element sets that are layered.* [Agre: Column 12 Lines 35-43 and Column 11 Lines 34-36].

Regarding claim 23, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the at least one node comprises a plurality of node types, wherein the plurality of node types includes at least one node of a first type and at least one node of a second type* [Agre: Column 3 Liens 50-53 "user" and non-user nodes], *wherein a first network having a first node density is assembled using the at least one node of a first type, wherein a second network having a second node density is assembled using the at least one node of a second type, wherein the second network is overlayed onto the first network* [Agre: Column 11 Lines 34-39].

Regarding claim 27, Agre-Kulka teaches that *data processing is controlled using at least one processing hierarchy* [Agre: Column 9 Lines 62-65], *the at least one processing hierarchy controlling at least one event selected from a group consisting of data*

classifications, data transfers, data queuing, data combining, processing locations, communications among the plurality of network elements [Agre: Column 10 Line 64].

Regarding claim 28, Agre-Kulka teaches that *data is transferred using message packets, wherein the message packets are aggregated into compact forms in the plurality of network elements using message aggregation protocols* [Agre: Column 3 Lines 7-9], *wherein the message aggregation protocols are adaptive to data type, node density, message priority, and available energy* [Agre: Column 6 Lines 5-8].

Regarding claim 29, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the functions of the at least one node include data acquisition, data processing, communication, data routing, data security, programming, and node operation* [Agre: Column 3 Line 8].

Regarding claim 32, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the at least one node controls data processing and data transmission in response to a probability of a detected event* [Agre: Column 11 Lines 50-58].

Regarding claim 35, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *data is collected from the sensor node by the at least one node, wherein at least one operation is performed on the data in response to parameters established by a user, the at least one operation selected from a group consisting of energy detection, routing, processing, storing, and fusing, wherein the routing, processing, storing, and fusing are performed in response to at least one result of the energy detection* [Agre: Column 5 Lines 29-44].

Regarding claim 40, Agre-Kulka teaches that *at least one of the plurality of network elements determines a position of the sensor node* [Agre: Column 12 Lines 33-50].

Regarding claim 41, Agre-Kulka teaches that *the sensor node determines at least one position using location information received from at least one of the plurality of network elements* [Agre: Column 12 Lines 33-50].

Regarding claim 47, Agre-Kulka teaches that *the at least one energy source is a photovoltaic device incorporated in or mounted on the at least one substrate* [Agre: Column 5 Line 62 and Kulka: Column 2 Lines 62-63 and Column 3 Line 11].

Regarding claim 48, Agre-Kulka teaches that *the at least one substrate operates as a vibration and acoustic sensor* [Agre: Column 6 Lines 49-67].

Regarding claim 50, Agre teaches *a sensor node comprising:*

a substrate [Agre: Claim 4]*;*

a processor incorporated in or mounted on the substrate [Agre: Claim 4]*, wherein the processor is configured to automatically join another node to form a network* [Agre: Column 2 Lines 52-55]*; and*

an antenna incorporated in or carried on the substrate and electrically coupled to the processor for wireless communication with the another node [Agre: Claim 4].

Agre does not explicitly disclose that the substrate is *flexible*.

However, Kulka teaches that the substrate is *flexible* [Kulka: Column 4 Lines 50-51].

Agre and Kulka are analogous art in the same field of endeavor as both describe sensor systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the flexible substrate scheme of Kulka in the system of Agre. One of ordinary skill in the art would have been motivated to modify the system of Agre with the flexible substrate scheme of Kulka because in doing so, the system would allow for more easily conforming the sensor device to the surface upon which it is to be attached [Kulka: Column 4 Lines 50-52].

Regarding claim 51, Agre-Kulka teaches that *the flexible substrate* [Kulka: Column 4 Lines 50-51] *is configured to operate as a sensor in an accelerometer* [Agre: Column 6 Lines 49-67].

Regarding claim 52, Agre-Kulka teaches *a photovoltaic device incorporated in or mounted on the substrate* [Kulka: Column 2 Lines 62-63 and Column 3 Line 11], *wherein the photovoltaic device is electrically coupled to provide an energy source for operation of the processor* [Agre: Column 5 Lines 62-63].

7. Claims 2-4, 11 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka in view of Fischer et al. (US 5420825, hereinafter *Fischer*).

Regarding claim 2, Agre-Kulka does not explicitly disclose that *the at least one substrate comprises active and passive substrates*.

However, Fischer discloses a sensor system that comprises both active and passive substrates [Fischer: Column 1 Lines 49-52].

Agre-Kulka and Fischer are analogous art in the same field of endeavor as both describe sensor systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the sensor details of Fischer for using particular sensor types in the sensor system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Age with the sensor types of Fischer because in doing so, the system would allow for better trade-offs in power usage and sensitivity [Fischer: Column 3 Lines 13-16].

Regarding claim 3, Agre-Kulka-Fischer teaches that *the at least one substrate comprises at least one thin film substrate* [Agre: Column 6 Lines 35-37], *wherein the at least one thin film substrate comprises a piezoelectric polymer film* [Fischer: Column 1 Lines 49-52], *wherein the piezoelectric polymer film is polyvinylidenedifloride (PVF_2)* [Fischer: Column 3 Lines 13-16].

Regarding claim 4, Agre-Kulka-Fischer teaches that *the at least one substrate is conformal* [Fischer: Column 1 Lines 30-32].

Regarding claim 11, Agre-Kulka-Fischer teaches that *the at least one sensor comprises at least one sensor selected from a group consisting of passive and active sensors* [Fischer: Column 1 Lines 49-52], *wherein the passive and active sensors include seismic sensors, acoustic sensors, optical sensors, infrared sensors, magnetic sensors, thermal sensors, accelerometers, and bi-static sensors* [Agre: Column 3 Lines 14-20].

Regarding claim 45, Agre-Kulka teaches that *the at least one substrate operates as an acoustic sensor* [Agre: Column 6 Lines 49-67].

Agre-Kulka does not explicitly disclose that the substrate operates as a *source.*

However, Fischer teaches that the substrate operates as a *source* [Fischer: Column 1 Lines 49-52].

Agre-Kulka and Fischer are analogous art in the same field of endeavor as both describe sensor systems. It would have been obvious for one of ordinary skill in the art

at the time the invention was made to utilize the sensor details of Fischer for using particular sensor types in the sensor system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Age with the sensor types of Fischer because in doing so, the system would allow for better trade-offs in power usage and sensitivity [Fischer: Column 3 Lines 13-16].

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka in view of Sohrabi et al. (*A Self Organizing Wireless Sensor Network*, applicant's prior art, hereinafter *Sohrabi*) in further view of Poor et al. (US 6028857, hereinafter *Poor*).

Regarding claim 16, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the at least one node is coupled among a monitored environment and at least one client computer* [Agre: Column 11 Line 6 "user interface node"], *wherein functions of the at least one node are remotely controllable using the at least one client computer* [Agre: Column 5 Lines 40-44], *wherein the at least one node provides node information to the plurality of network elements* [Agre: Column 2 Lines 35-43], *wherein data processing is distributed through the sensor network in response to the node information* [Agre: Column 2 Lines 35-43].

Agre-Kulka does not explicitly disclose that *the information* includes *message priority.*

However, Sohrabi teaches nodal communication using a message prioritization system [Sohrabi: Section 3 Paragraph 2].

Agre-Kulka and Sohrabi are analogous art in the same field of endeavor as both describe nodal communications systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the priority scheme of Sohrabi for prioritizing messages in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka with the priority scheme of Sohrabi because in doing so, the system would allow for a higher quality of service [Sohrabi: Section 3 Paragraph 2].

The combination of Agre-Kulka-Sohrabi does not explicitly disclose that *the information* includes *node resource cost*.

However, Poor teaches nodal communications using a node resource cost [Poor: Column 2 Lines 31-37 and Figures 2-3].

Agre-Kulka-Sohrabi and Poor are analogous art in the same field of endeavor as both describe nodal communications systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the resource cost scheme of Poor for defining costs of resources in the system of Agre-Kulka-Sohrabi. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka-Sohrabi with the resource cost scheme of Poor because in doing so, the system would allow for more resource/energy-efficient routing [Poor: Column 2 Lines 31-37].

9. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka in view of Myer et al. (US 6615088 B1, hereinafter *Myer*).

Regarding claim 20, the combination of Agre-Kulka-Myer teaches that *the plurality of network elements comprise a sensor network including at least network* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *at least one network includes wired networks, wireless networks, and hybrid wired and wireless networks* [Myer: Column 2 Lines 58-60]*, wherein the at least one network comprises at least one network selected from a group comprising the Internet, local area networks, wide area networks, metropolitan area networks, and information service stations* [Myer: Figure 1].

Regarding claim 21, Agre-Kulka-Myer teaches that *the internetworking comprises providing remote accessibility using World Wide Web-based tools to data, code, management, and security functions, wherein data includes signals and images, wherein code includes signal processing, decision support, and database elements, and wherein management includes operation of the plurality of network elements* [Myer: Column 4 Lines 28-50].

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka as applied to claim 1 above in view of Davis et al. (US 5742829, hereinafter *Davis*).

Regarding claim 24, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52].

Agre-Kulka does not explicitly disclose that *code and data anticipated for future use are predistributed through the sensor network using low priority messages, wherein the code and the data are downloadable from at least one location selected from a group consisting of storage devices of the plurality of network elements, and storage devices outside the sensor network*.

However, Davis discloses a network wherein code and data anticipated for future use is distributed through low-priority background messages and code and data are downloadable from a storage device [Davis: Column 6 Lines 27-65].

Agre-Kulka and Davis are analogous art in the same field of endeavor as both describe network communications. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the data distribution scheme of Davis for pre-distributing anticipated information in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka with the data distribution scheme of Agre-Kulka because in doing so, the system would minimize the waiting time required to download data [Davis: Column 2 Lines 10-15].

11. Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka as applied to claim 1 above in view of Hayball et al. (US 6233610 B1, hereinafter *Hayball*).

Regarding claim 30, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the at least one node includes at least one processor to control the sensor node and at least one device selected from a group consisting of sensors, actuators, communications devices, signal processors, information storage devices, node controllers, and power supply devices, supporting remote reprogramming and control of the at least one device* [see Claim 1].

Agre-Kulka does not explicitly disclose *application programming interfaces (APIs), wherein the plurality of APIs are coupled to* the *at least one processor wherein the plurality of APIs are layered.*

However, Hayball discloses such a plurality of layered APIs [Hayball: Column 5 Lines 48-54 and Figure 13] coupled to a node's processor [Hayball: Figure 5].

Agre-Kulka and Hayball are analogous art in the same field of endeavor as both describe network management systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the layered API scheme of Hayball for using multiple frameworks in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka with the layered API scheme of Hayball because in doing so, the system would allow for simplified construction of the software of a network system [Hayball: Column 4 Lines 36-39].

12. Claims 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre, Kulka and Hayball as applied to claim 30 above in view of Sohrabi.

Regarding claim 31, the combination of Agre-Kulka-Hayball teaches that *the plurality of APIs enable distributed resource management* [Hayball: Column 1 Lines 38-50] *by providing network resource information* [Hayball: Column 13 Lines 6-12] *to the plurality of network elements, wherein information transfer among the plurality of network elements is controlled using a synchronism hierarchy* [Hayball: Column 25 Lines 35-37] *established in response to the resource information.*

Agre-Kulka-Hayball does not explicitly disclose that *the information* includes *message priority.*

However, Sohrabi teaches nodal communication using a message prioritization system [Sohrabi: Section 3 Paragraph 2].

Agre-Kulka-Hayball and Sohrabi are analogous art in the same field of endeavor as both describe nodal communications systems. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the priority scheme of Sohrabi for prioritizing messages in the system of Agre-Kulka-Hayball. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka-Hayball with the priority scheme of Sohrabi because in doing so, the system would allow for a higher quality of service [Sohrabi: Section 3 Paragraph 2].

13. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka as applied to claim 1 above in view of Clare (US 6414955 B1, hereinafter *Clare*).

Regarding claim 33, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52] and that *the plurality of network elements are self-assembling* [Agre: Column 10 Lines 11-15].

Agre-Kulka does not explicitly disclose *search and acquisition modes of the at least one node search for participating ones of the plurality of network elements, wherein a determination is made whether each of the participating ones of the plurality of network elements are permitted to join the sensor network using a message hierarchy, wherein the sensor network is surveyed at random intervals for new nodes and missing nodes.*

However, Clare teaches such a method of node searching and joining [Clare: Column 8 Lines 7-48].

Agre-Kulka and Clare are analogous art in the same field of endeavor as both describe distributed topography learning methods for wireless networks. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the nodal connection scheme of Clare for joining sensor nodes in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka with the nodal connection scheme of Clare because in doing so,

the system would allow for the nodes to communicate with each other in an ad-hoc manner [Clare: Abstract].

14. Claims 34 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka as applied to claim 1 above in view of LeBlanc et al. (US 6236365 B1, hereinafter *LeBlanc*).

Regarding claim 34, Agre-Kulka teaches that *the plurality of network elements comprise a sensor network including at least one node* [Agre: Column 2 Lines 46-48 and Column 3 Lines 50-52].

Agre-Kulka does not explicitly disclose that *the plurality of network elements further include at least one database, wherein the at least one database includes at least one storage device selected from a group consisting of storage devices coupled to at least one of the plurality of network elements and storage devices of the at least one node, wherein the at least one database comprises data-driven alerting methods that recognize conditions on user-defined data relationships including coincidence in signal arrival, node power status, and network communication status.*

However, LeBlanc teaches such a database coupled in a node [LeBlanc: Column 54 Lines 36-41 and Figures 4 and 43 (DA, DB)] with data-driven alerting methods recognizing said conditions [LeBlanc: Column 61 Lines 30-67].

Agre-Kulka and LeBlanc are analogous art in the same field of endeavor as both describe networked sensor systems. It would have been obvious for one of ordinary skill

in the art at the time the invention was made to utilize the database scheme of LeBlanc for ordered information storage in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the system of Agre-Kulka with the database scheme of LeBlanc because in doing so, the system would allow for more orderly storage of received data.

Regarding claim 36, Agre-Kulka-LeBlanc teaches that *the routing comprises selecting at least one data type for routing, selecting at least one of the plurality of network elements to which to route the selected data, selecting at least one route to the selected at least one of the plurality of network elements, and routing the selected at least one data type to the selected at least one of the plurality of network elements* [Agre: Column 9 Lines 49-53 and Column 11 Lines 34-36].

Regarding claim 37, Agre-Kulka-LeBlanc teaches that the *processing comprises selecting at least one data type for processing, selecting at least one processing type, selecting at least one of the plurality of network elements to perform the selected at least one processing type, and transferring the selected at least one data type to the selected at least one of the plurality of network elements using at least one route through the sensor network* [Agre: Column 9 Lines 49-53 and Column 1 Lines 34-36], *wherein the selection of at least one processing type comprises determining at least one probability associated with a detected event and selecting at least one processing type in response to the at least one probability* [LeBlanc: Column 8 Lines 5-10].

Regarding claim 38, Agre-Kulka-LeBlanc teaches that *the storing comprises selecting at least one data type for storage, selecting at least one storage type, selecting at least one of the plurality of network elements to perform the selected at least one storage type, and transferring the selected at least one data type to the selected at least one of the plurality of network elements using at least one route through the sensor network* [Agre: Column 11 Line 61-Column 12 Line 12].

15. Claims 43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka as applied to claim 1 above in view of Mann et al. (US 6809653 B1, hereinafter *Mann*).

Regarding claim 43, Agre-Kulka teaches that *at least one substrate comprises a thin film tape* [Agre: Column 6 Lines 35-37].

Agre-Kulka does not explicitly disclose that *the thin film tape includes an adhesive*.

However, Mann discloses a sensory system that includes an adhesive [Mann: Column 2 Lines 53-56].

Agre-Kulka and Mann are analogous art in the same field of endeavor as both describe sensor nodes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the adhesive scheme of Mann for securing a sensor in the system of Agre-Kulka. One of ordinary skill in the art would have been

motivated to modify the sensor of Agre-Kulka with the adhesive scheme of Mann because in doing so, the sensor would remain attached in the proper location [Mann: Column 2 Lines 53-56].

Regarding claim 46, Agre-Kulka teaches that *the at least one substrate comprises a material suitable for unrolling to different lengths* [Agre: Column 6 Lines 35-37].

Agre-Kulka does not explicitly disclose that the material is suitable *as a sensor tape*.

However, Mann discloses a sensory system that includes material suitable *as a sensor tape* [Mann: Column 2 Lines 53-56].

Agre-Kulka and Mann are analogous art in the same field of endeavor as both describe sensor nodes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the adhesive scheme of Mann for securing a sensor in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the sensor of Agre-Kulka with the adhesive scheme of Mann because in doing so, the sensor would remain attached in the proper location [Mann: Column 2 Lines 53-56].

16. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka in view of Henderson et al. (US 5203199, hereinafter *Henderson*).

Regarding claim 49, Agre-Kulka teaches that:

the at least one substrate operates as an accelerometer [Agre: Column 6 Lines 49-67]*; and*

the at least one energy source comprises one or more battery cells [Agre: Column 5 Lines 62]

Agre-Kulka does not explicitly disclose that the battery cells are *operable to serve as proof masses for the accelerometer.*

However, Henderson teaches that the battery cells are *operable to serve as proof masses for the accelerometer* [Henderson: Column 11 Lines 40-45].

Agre-Kulka and Henderson are analogous art in the same field of endeavor as both describe sensor nodes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the proof mass scheme of Henderson for using the weight of batteries in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the sensor of Agre-Kulka with the proof mass scheme of Henderson because in doing so, the battery weights would be taken into account.

17. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agre and Kulka in view of Walter et al. (US 4494121, hereinafter *Walter*).

Regarding claim 53, Agre-Kulka does not explicitly disclose that *the flexible substrate has an aerodynamic shape suitable for deployment by air.*

However, Walter teaches that *the flexible substrate has an aerodynamic shape suitable for deployment by air* [Walter: Column 8 Lines 5-14].

Agre-Kulka and Walter are analogous art in the same field of endeavor as both describe sensor nodes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the aerodynamic scheme of Walter for shaping a sensor in the system of Agre-Kulka. One of ordinary skill in the art would have been motivated to modify the sensor of Agre-Kulka with the aerodynamic scheme of Walter because in doing so, the system would better meet the physical demands of flight [Walter: Column 8 Lines 5-14].

18. Claims 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agre in view of Alain Berthon (US 5864323, hereinafter *Berthon*).

Regarding claim 54, Agre teaches a sensor node comprising:

an antenna positioned on a dielectric substrate above a ground plane [Kaiser et al., US 5659195, Column 5 Lines 7-11 (incorporated by reference in Agre)]*;*

a processor configured for wireless communication to automatically assemble into a network with other nodes using the antenna;

at least one sensor coupled to provide data to the processor;

a battery to provide power for operation of the processor; and

wherein the processor, the at least one sensor, and the battery are enclosed.

Agre does not explicitly disclose that:

the antenna is *an annular ring antenna comprising at least one ring; and*

the elements *are enclosed in the interior region of the antenna*.

However, Berthon teaches that:

the antenna is *an annular ring antenna comprising at least one ring* [Berthon: Column 2 Lines 28-29]*; and*

the elements *are enclosed in the interior region of the antenna* [Berthon: Figure 13].

Agre and Berthon are analogous art in the same field of endeavor as both describe sensor nodes. It would have been obvious for one of ordinary skill in the art at the time the invention was made to utilize the annular ring scheme of Berthon for shaping an antenna in the system of Agre. One of ordinary skill in the art would have been motivated to modify the sensor of Agre with the annular ring scheme of Berthon because in doing so, a more universal size and design [Berthon: Column 2 Lines 4-6 and 28-29].

Regarding claim 55, Agre-Berthon teaches that *the processor, the at least one sensor, and the battery are enclosed in the interior region of the antenna so as to provide a resonant antenna structure* [Berthon: Figure 13 and Column 2 Lines 28-29].

Double Patenting

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, 43 and 45-55 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of U.S. Patent No. 6735630 B1. Although the conflicting claims are not

identical, they are not patentably distinct from each other because a comparison between instant application independent claim 1 and claim 1 of the patented claims reveal that patented claim 1 is simply a species of the broader claim 1 of the instant application. Although instant application claim 1 recites the limitation of a flexible substrate, this is also taught by the patent. Hence, claim 1 of the instant application is generic to the species of the invention covered by claim 1 of the patent. Thus, the broad generic invention is anticipated by the narrower of the species of the patented invention, thus without a terminal disclaimer, the species claims preclude issuance of the generic application. See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the text of the passage taught by the prior art or disclosed by the examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMAD HUSSAIN whose telephone number is (571) 270-3628. The examiner can normally be reached on Monday through Friday from 0800 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/IH/
Imad Hussain
Examiner, Art Unit 2151

/Salad Abdullahi/
Primary Examiner, Art Unit 2157